

**UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

ENTROPIC COMMUNICATIONS, LLC,

Plaintiff

v.

CHARTER COMMUNICATIONS, INC.,

Defendant.

Civil Action No. 2:22-cv-00125-JRG

**JURY TRIAL DEMANDED**

**CHARTER’S REPLY IN FURTHER SUPPORT OF ITS MOTION FOR SUMMARY  
JUDGMENT OF INVALIDITY OF THE ASSERTED CLAIMS OF THE ‘362 PATENT**

## I. PRELIMINARY STATEMENT

Entropic's purported disputes are internally inconsistent, outright misrepresent the record, and/or cite no evidence at all. Such arguments cannot defeat summary judgment. *Jones v. Shivers*, No. 4:14CV354-ALM-DBB, 2016 WL 11472333, at \*4 (E.D. Tex. July 15, 2016).

## II. REPLY TO STATEMENT OF UNDISPUTED MATERIAL FACTS ("SUFs")

Only purportedly disputed SUFs are addressed below, though these are *not genuine disputes*.

4. Entropic does nothing more than quote from the '362 specification, without explaining how it raises a genuine factual dispute. In fact, the passage confirms SUF 4.

5. Entropic does not dispute that the alleged '362 invention includes reducing the bandwidth of the signal to be digitized so that less expensive ADCs and other downstream digital circuitry can be used. Entropic contends the invention includes more, but that is irrelevant. The described invention undisputedly requires reducing bandwidth before digitizing, and since the claims cover systems which do nothing to the signal before digitizing, there is no written description for the full scope of the claims.

6. Entropic states that SUF 6 refers "merely" to ADCs, but SUF 6 refers to "ADCs *and other downstream digital circuitry*." Entropic states that SUF 6 "is both reductive and misleading," but it fails to point to a genuine factual dispute or cite any evidence.

7. Entropic does not dispute that the *radio front ends* of Figure 2 and 3 are similar. The quoted testimony of Entropic's own expert concedes "They are similar."

8. Entropic does not dispute that Figure 2 describes analog-to-digital converters (ADCs) that take analog inputs from a "radio front end 210" (which Entropic's expert called an "*analog* front end," (Entropic Ex. B at 34:14–18)) and provide digital outputs to a "digital front end 230."

9. Entropic inexplicably contends "it is unclear whether Charter is referring to the '362 patent," but obviously it is the '362 patent, which is the only patent addressed by the Motion and

to which Charter provided a cite. Entropic suggests it does not know what “an unspecified ‘RF input signal’” refers to, but “RF input signal” is taken word-for-word from the patent. SUF 9.

10. Entropic suggests that Charter’s citations to Figure 1 are “highly misleading” because Figure 1 describes the prior art, but Entropic does not dispute that both Figure 1 *and Figure 2* (the invention) show a tuner that captures a “swath” of channels having a bandwidth designated  $BW_1$  and including “desired” channels and “undesired” channels. SUF 10.

11. Entropic does not dispute that the ’362 patent describes an embodiment with four desired channels among ten total channels. (Charter Ex. A at 4:24–25, 5:43–44.) Entropic contends this SUF is “highly misleading” because it refers to “ $BW_1$ ” in Figure 1, which is prior art, but Figure 2 (the invention) shows *the exact same depiction of “ $BW_1$ ”* which Entropic does not dispute.

14. Entropic did not identify a single embodiment in the ’362 patent that does not downconvert the incoming analog signal and transform it into “in-phase” and “quadrature” signals (“I” and “Q” signals) before digitizing it. SUF 14. That is because no such embodiment exists.

17. Entropic does not dispute Charter’s characterization of the specification, but disputes that “this is necessarily required as a limitation” of the claims. This is a legal dispute, not a factual one.

18. Entropic cross-references eight paragraphs of Dr. Kramer’s report with no explanation of how these raise a genuine dispute. Entropic does not dispute that, when asked at deposition, Dr. Kramer could not identify any embodiment “that does not convert analog I and Q signals into digital I and Q signals.” (Charter Ex. L at 55:10–57:11.) Dr. Kramer pointed only to Figure 4 showing downconverting after digitization (in Digital Front End 430), but Entropic does not dispute that this figure *also shows downconverting and conversion to I and Q signals before digitization* (in Radio Front End 410). The “radio front end 210 operates as . . . *down-mixer*” (Charter Ex. A at 5:15–16) and the corresponding radio front end 411 in Figure 4, which is similar

to Figure 2 (7:29–32), specifically describes mixers that create I and Q signals (*id.* at 7:10–11). All the described embodiments do this before digitizing, and Entropic fails to identify an embodiment that does not.

19. Entropic disputes that the phrase “*thanks to* the complex down-mixer architecture” means that the reduction in bandwidth is due to, or is a direct result of the functions performed by, the complex down-mixer architecture. There can be no other meaning of this common English phrase and, moreover, Entropic provides no alternative interpretation of this phrase or alternative explanation of how the bandwidth gets reduced.

21. Entropic does not identify an embodiment that differs from what is described in SUF 21.

22. Entropic cites no evidence in response.

24. Entropic does not dispute SUF 24’s discussion of Figure 2.

26. Entropic does not identify an embodiment in which digital mixers operate on something other than digital I and Q signals.

27. Entropic does not identify an embodiment in which the RF signal is digitized before *any* downconverting.

28. Entropic does not identify an embodiment in which the RF signal is *not* transformed into I and Q signals before digitization.

29. Entropic does not dispute that, as to Zhang, Dr. Kramer’s report discusses only the “selecting” step and no other claim elements. (*See* Charter Ex. H ¶¶ 120–128.)

30. Entropic concedes that Zhang describes a “wide-band receiver.” Entropic’s contention that there is only a “single reference” to a wide-band receiver is not only irrelevant to anticipation, but false as Zhang contains four such references. (Charter Ex. I at 5:56–57, 6:50–60, 7:1–8, Figure 8.)

32. Entropic does not dispute that Zhang discloses signals from “540–750 MHz,” but disputes that this is a bandwidth of 210 MHz. However, there can be no real dispute that  $750 - 540 = 210$ .

35. Entropic disputes SUF 35 only because of “the implication” that downconverting must specifically be *analog* downconverting.” Charter says no such thing, so there is no genuine dispute.

37. Entropic disputes that a POSITA would refer to a component that multiplies two signals together as a “mixer,” but it cannot cite any evidence because its expert did not address the claimed “mixer” in his report. To the extent Entropic is attempting to construe the claim term “mixer” as excluding multiplication of signals, that is a legal dispute, not a factual one. No such construction is warranted because the ’362 patent equates multiplication with mixing: “*Each of the mixers 211 and 221 multiplies (mixes)* an amplified RF signal 203 with a respective first oscillator frequency signal 205 and a second oscillator frequency signal 207 . . . .” (Charter Ex. A at 4:41–45.) Entropic does not dispute SUF 38 below, which undermines its attempt to dispute SUF 37.

39. Entropic states that “[t]he ‘n channels’ is not the ‘total number of channels in the RF signal’,” but there is no evidence to support this contention because its expert did not say so in his report. Zhang provides that the “*entire signal band with n channels* can be converted.” (Charter Ex. I at 3:57–59.) Zhang provides that the digital circuitry processes “the multi-channel digital RF signal into separate digital RF channels  $C_1$  to  $C_n$ .” Zhang at 3:60-62; 4:44-46 (“digital tuner 300 . . . separates the RF channels  $C_1$  to  $C_n$ .”). Its unexplained citation to Dr. Kramer simply reiterates his view that Zhang would be difficult to implement with “hundreds” of channels, but claim 11 is not limited to hundreds of channels. (Charter Ex. H ¶¶ 124–126.) Entropic cannot create a genuine factual dispute without evidence or by relying on an erroneous claim construction.

43. Entropic does not dispute that Zhang describes saving costs (Charter Ex. I at 3:50–54 (“the cost of the overall system is reduced”)) and improving speed (*id.* at 4:4–6 (“render it much

faster’’)). Entropic also does not dispute that the ’362 patent describes saving costs (*id.* at 5:40-45 (“to reduce system costs”), *id.* at 6:60–61 (“it eliminates the need of expensive data conversion, filtering and channel selection”), *id.* at 10:25–27 (“the multi-tuner architecture allows the use of slower speed (i.e., lower cost) analog-to-digital converters’’) and improving speed (Charter Ex. M ¶ 180 (discussing “limited speed” of alternatives to ’362))).

45. Entropic cites to no relevant evidence, because Dr. Kramer’s cited opinion—that Zhang would not be “feasible, or even possible” with “hundreds” of channels—improperly assumes that claim 11 is limited to hundreds of channels. Not only is the scope of claim 11 a legal, rather than factual, question, there is no limitation in claim 1. In fact, the specification describes an embodiment with only 10 channels (Charter Ex. A at 4:23–24). Entropic cannot create a genuine factual dispute by relying on an erroneous claim construction.

46. Entropic says that it disputes SUF 46, but its explanation raises no fact disputes. SUF 46 states that “[c]laim 11 does not require processing ‘hundreds’ of television channels,” which is a claim construction issue, not a fact question. SUF 46 then cites Dr. Kramer’s admission “that 10 television channels is an example of ‘wideband,’” which Entropic does not dispute. Entropic’s response is rather inscrutable: (i) Entropic questions whether Charter’s reference to “claim 11” refers to the ’362 patent, which obviously it does; and (ii) Entropic states that “‘wideband’ is necessary, but not sufficient, for practice of claim 11 the ’362 Patent”—Charter agrees with this irrelevant proposition, as there are other claim elements besides “wideband.” (Charter Ex. G at 17:12–22.)

47. Entropic does not dispute that Dr. Kramer’s report says nothing about Zhang being unable to receive and process 10 television channels. Entropic argues this is immaterial by relying on an erroneous assumption that “hundreds” of channels must be processed to meet claim 11. This is a

legal claim construction issue, not a genuine factual dispute, and Entropic’s construction is wrong because, as its expert concedes, the ’362 patent says that 10 channels is an example of wideband.

53. The language of SUF 53—that serial and parallel interfaces were “commonly known”—was taken directly from the ’362 patent itself (Charter Ex. A at 6:56–58 (the digital channels “will be sent as a serial or parallel digital data stream to a demodulator *using a serial or parallel data interface according to commonly known methods . . .*”).) Entropic and its expert simply deny this passage without explanation, which cannot be sufficient to create a genuine dispute of fact.

57. SUF 57 is also taken directly from Favrat, which describes “*a serial digital data stream on an output terminal 506,*” and “[t]he *serial digital data on output terminal 506 can be coupled to a digital demodulator* and a decoder for demodulating and decoding the digital television signals.” (Charter Ex. J 8:10–19.) Entropic and its expert simply deny this passage without explanation, which cannot be sufficient to create a genuine dispute of fact.

58. Entropic relies on Dr. Kramer to dispute SUF 58, but Dr. Kramer believed that the serial interface of claim 12 could not be implemented using commonly known methods (Charter Ex. L at 91:5–10), while the ’362 patent says precisely the opposite. This cannot possibly create a genuine dispute of material fact.

59. See SUF 57 and 58 above.

#### **A. Claims 11 And 12 Of The ’362 Patent Are Invalid Under 35 U.S.C. § 112.**

Entropic does not dispute that the written description must be found within the “four corners” of the patent, i.e., a specification that merely renders the claims obvious is invalid and that the specification must enable the invention’s novel aspects. Entropic contends that the “full scope” rule does not apply to written description, but its cited cases simply apply the full scope rule to enablement and say nothing about that rule *not* applying to written description. Charter cited cases applying the “full scope” rule to written description, which Entropic just ignores.

Charter's argument on written description and enablement is straightforward: the claims as construed cover digitizing before any downconversion occurs and without any prior transformation into I and Q signals, but the specification describes and enables only digitization which occurs after downconversion occurs and after transformation into I and Q signals. Indeed, downconversion and transformation to I and Q signals before digitization *is the invention*—that is what effectuates the purportedly novel reduction in bandwidth which allows use of less expensive ADCs. Thus, there is no written description/enablement for the ***full scope*** of the claims.

Entropic's opposition does not even attempt to identify an embodiment that digitizes before any downconversion *or* any embodiment that does not transform to I and Q signals before digitization. Its main argument—that downconverting *also* occurs after digitization—is both undisputed and a complete red herring. In *every* figure, the Radio Front End downconverts and transforms to I/Q first, then the ADCs digitize, then the Digital Front End does more downconverting—this still requires downconverting before digitization. Entropic's contention that Charter relied only on Figure 2 is false; Charter cited all the figures. At bottom, Charter showed there was no disclosed embodiment without downconversion and I/Q transformation before digitization, and it was incumbent on Entropic to create a genuine dispute by pointing to a passage of the '362 patent that a reasonable juror could consider to be a disclosure of digitizing without any prior downconversion and without any prior I/Q transformation. Because Entropic has failed to identify any such embodiments within the four corners of the '362 patent, there is no written description or enablement of the full scope of claim 11 as construed.<sup>1</sup>

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<sup>1</sup> Claim 12 depends from claim 11, but the dependent element does not add a requirement that downconverting and I/Q transformation must occur before digitization. Thus, claim 12 is invalid for the same reasons as claim 11.



Entropic’s argument that the Court ruled against Charter on this issue at *Markman* is not correct. The passage of the Court’s Order quoted by Entropic held that the invention was not limited to “radio frequency” signals. There was no finding by the Court regarding a lack of disclosure of digitizing before any downconverting and transformation into I/Q signals.

Entropic has not provided a simple column/line/figure citation to a description of digitizing the incoming signal before any downconverting and transformation into I/Q signals—that is because there is none. The claims as construed cover such an embodiment, but the specification contains no such description—much less enabling disclosure. Therefore, the claims are invalid.

**B. Claims 11 And 12 Of The ’362 Patent Are Invalid Under 35 U.S.C. §§ 102 And 103 In View Of Zhang**

Entropic disputes that Zhang describes three elements of claims 11–12.

*First*, Entropic contends that Zhang does not describe downconverting “via a mixer module.” Nowhere in Dr. Kramer’s rebuttal report does he dispute that Zhang describes this claim element, nor does he even use the words “mixer” or “multiplier” with respect to Zhang. That is because the ’362 patent equates “multiplies” with “mixing” (Charter Ex. I at 4:41–45 (“Each of the mixers 211 and 221 multiplies (*mixes*) an amplified RF signal 203 with a respective first oscillator frequency signal . . . .”) and Zhang explicitly states that “the multi-channel analog RF signal *is multiplied by* a reference signal . . . .” (*Id.* at 3:35–37.) Consistent with the ’362 patent’s teaching, Dr. Goldberg explained that a “multiplier” is synonymous with a “mixer” to a POSITA. (Dkt. 170-2 at ¶ 392 (“In my opinion, multiplying an RF signal by a reference signal (local oscillator) is *known in the art as ‘mixing.’*”). While Entropic relies on Dr. Kramer’s deposition testimony *elicited for the first time by Entropic’s counsel on redirect*, that testimony is clearly outside the scope of his report and must be disregarded. Entropic also cites Dr. Goldberg’s acknowledgement that Zhang does not use the term “mixer” *in haec verba*, but the law does not

require *in haec verba* disclosure. Zhang discloses “multiplying,” which is a synonym for “mixing” to a POSITA.

*Second*, Entropic concedes that Zhang describes selecting desired television channels, but argues that Zhang cannot process “all desired and undesired channels.” It is unclear what Entropic means. Its argument suggests that claim 11 requires processing the entire television spectrum of roughly 1 GHz, but there is no such requirement in the claim. Indeed, Entropic acknowledges that such a reading would exclude from claim 11 the ’362 preferred embodiment showing an example involving just 10 channels. (Opp. at 27.) “[A] claim construction that ‘excludes the preferred embodiment is rarely, if ever, correct....’” *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996). Ultimately, the only evidence Entropic cites is Dr. Kramer’s report in which he opines that Zhang could not feasibly process “hundreds” of channels. This is another red herring, because claim 11 does not require “hundreds” of channels.

*Third*, Entropic contends that Zhang does not disclose the “serial interface” element of claim 12 and that Zhang plus Favrat do not render it obvious. The ’362 patent admits that serial and parallel interfaces were “commonly known.” (Charter Ex. A. at 6:55–58.) Entropic also does not dispute that the prior art’s disclosure of a small genus can amount to anticipation of a claim to a species of the genus. Therefore, Zhang’s description of the genus of outputting digital datastreams anticipates the species of outputting *serial* digital datastreams. Favrat discloses outputting serial digital datastreams, and it is an example of a “commonly known” serial digital datastream interface referenced in the ’362 specification. Entropic disputes only that Favrat lacks other claim elements, but that is irrelevant. Thus, Zhang discloses claim 12 and/or renders claim 12 obvious with Favrat.

### III. CONCLUSION

For these reasons, Charter requests the Court grant its motion.

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Respectfully submitted,

/s/Daniel Reisner by permission Elizabeth Long

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**CERTIFICATE OF SERVICE**

The undersigned certifies that the foregoing document and all attachments thereto are being filed electronically in compliance with Local Rule CV-5(a). As such, this document is being served October 3, 2023, on all counsel of record, each of whom is deemed to have consented to electronic service. L.R. CV-5(a)(3)(A).

/s/ Elizabeth Long  
Elizabeth Long